

Washington Park Arboretum

BULLETIN

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Washington Park Arboretum

The Arboretum is a 230-acre dynamic garden of trees and shrubs, displaying internationally renowned collections of oaks, conifers, camellias, Japanese and other maples, hollies and a profusion of woody plants from the Pacific Northwest and around the world. Aesthetic enjoyment gracefully co-exists with science in this spectacular urban green space on the shores of Lake Washington. Visitors come to learn, explore, relax or reflect in Seattle's largest public garden.

The Washington Park Arboretum is managed cooperatively by the University of Washington Botanic Gardens and Seattle Parks and Recreation; the Arboretum Foundation is its major support organization.

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CONTENTS

2 Remembering Sarah Reichard
—*Paige Miller*

3 Shrubs and Trees for a Warmer Seattle
—*Christina Pfeiffer*

8 HIDDEN TREASURES OF THE ARBORETUM
Mayten Tree—*Walt Bubelis*

11 No Place for Old Trees? —*Cass Turbull*

15 Our Changing Climate, Part 2: Adapting the Garden to the Coming Conditions
—*Niall Dunne*

18 Reluctant City, Part 3: Reconciling Nature's Outline—*Betsy Anderson*

24 PLANT ANSWER LINE: Warding Off the Evil Eye—*Rebecca Alexander*

26 IN A GARDEN LIBRARY: Award-Winning New Books for Pacific Northwest Gardeners, Part 2—*Brian R. Thompson*



ABOVE: *Camellia sasanqua 'Briar Rose'* blooming in the Camellia Collection in late October. (Photo by Niall Dunne)

ON THE COVER: A Japanese maple photographed near the upper road between Loderi Valley and the Winter Garden by local photographer Dean Forbes. "I took this at the end of October 2012," says Dean. "The location is a favorite one of mine in the Arboretum for photographing a variety of fall color." See more of Dean's amazing photos on his Flickr page, www.flickr.com/photos/dean_forbes.

Remembering Sarah Reichard

Sarah was always so full of energy, so full of ideas, so full of life. She relished her role as the director of UW Botanic Gardens and was everywhere—creating new programs, working on new gardens, dreaming big. So, it was no surprise that she led horticulture tours around the world: to Cuba, Costa Rica, New Zealand and South Africa. The total surprise was the news that on Sunday, August 28, she suffered a brain aneurysm and died in Cape Town, while leading that last trip. She was only 58 years old. Our condolences to her husband, Brian, who was with her at the last.

When we got the news on Monday morning, her colleagues in the Arboretum were grieved and shocked. It couldn't be true! And it was on that first day, when we began to console each other and to tell stories about her, that it became so clear how many lives she had touched—how many people felt a special connection to her.

Sarah spent nearly her entire career connected to the University of Washington and the Arboretum. When she first became director, she spoke at our annual meeting. The title of her speech, "My Arboretum," was a play on the social media site Myspace. She told of coming here to the Arboretum as a teenager and falling in love

with the place. She earned all of her degrees at UW, studying botany, horticulture and environmental and forest sciences. She went on to spend nearly all of her professional career at UW as well, becoming a full professor and a noted expert on invasive plants. She breathed purple and gold.

Her leadership in the Arboretum was eventful. She started the BioBlitz, citizen science at its best. She loved the children's education programs, which she expanded to include summer camps and the innovative Fiddleheads Forest Preschool. She mentored and nurtured her grad students, many of whom later came to work for her. And she was restless to get things done: the New Zealand Forest, the camellia renovation, the new Loop Trail.

Sarah and I shared an interest in improving the visitor experience here. From the first, we made changes—a new coffee bar in the lobby, new patio furniture, better interpretive signage. We fretted about the parking problems. Our last two projects together have been so much fun: planning a new summer-oriented garden, as well as winning the completion to get it funded, and putting together the plans for a new Environmental Education Center in the Arboretum. (It was Sarah's dream to have a great place for kids and adults to learn about nature and their connection to the environment.)

Prior to Sarah's passing, we had just started to raise the funds for the pre-design of the Environmental Education Center. Oh, my! Now that falls to those of us who intend to help remember her by finishing the work she began. In addition to hundreds of cherished friendships, I hope that this can be a lasting legacy to her. Peace, Sarah. We'll do our best. ~

Cheers,



Paige Miller, Executive Director,
Arboretum Foundation



Shrubs and Trees for a Warmer Seattle



BY CHRISTINA PFEIFFER

Our local climate has been described as “modified Mediterranean” and is characterized by its predominant patterns of winter rain and summer drought. But as we all know, this climate is undergoing further modification. Over the past few years, average regional temperatures have been trending slightly upward, expanding our growing season

earlier into spring and later into fall. Winters have been warmer and wetter, while summers have been hotter and drier. Long-term climate change predictions for our region say these recent trends will become the norm.

So, when it comes to sustainable plant selection in the Pacific Northwest, it’s becoming increasingly imperative that we choose plant species with strong adaptations to winter rain and summer drought. As time goes by, species native to regions that receive significant rainfall during the growing season (think China and eastern North America) will become even more prone to drought-related stress and secondary pest problems.

TOP: Hardy fuchsia blooming in the Arboretum in September. (Photo by Niall Dunne)

INSET: Kinnikinnick produces handsome, bird-friendly berries that persist into winter. (Photo by Jesse Taylor/Wikimedia Commons)



We're already starting to see this happen. One example is the increased decline and mortality among European weeping birch (*Betula pendula*) trees in the Seattle area. Drier growing seasons have left it more susceptible to damage by the bronze birch borer (*Agrilus anxius*), which is attracted to stressed trees. Katsura (*Cercidiphyllum japonicum*) and eastern dogwood (*Cornus florida*) also have been showing increased drought stress symptoms in recent years. With decreasing snow pack in the mountains and less stored water in our reservoirs, it will likely become ever more difficult to provide adequate irrigation for these types of trees. Some of our regional native species will also be affected. Indeed, we're already seeing some dieback and stress-related maladies, such as the appearance of drought-related dead tops in Douglas fir and western red cedar trees in planted and native sites, as well as the broad spread of heavy bark beetle damage to conifers throughout the West.

The sustainable design mantra of "right plant, right place" reminds us not only to seek out plants with natural adaptations to the winter rain/summer drought climate pattern, but also to take a harder look at plants that enjoy just a little more summer heat, such as native plants that grow in climate zones to the south of us. Following are short profiles of trees and shrubs

that I have seen retaining a good appearance through long, dry seasons and through periods of higher summer temperatures. These selections are also suitable to average garden conditions and are well adapted for wet winters.

Vine Hill Manzanita (*Arctostaphylos densiflora*)

Native to Southern California, this medium-sized mounding shrub produces dense, glossy evergreen foliage and sports beautiful, cinnamon-colored bark. Clusters of urn-shaped white or pink flowers cover the plant in late winter and early spring and attract hummingbirds and bees. Mature specimens can reach nearly five feet high and wide. The cultivar *A. densiflora* 'Howard McMinn' is one of the most popular and dependable manzanitas grown in our area. Though it thrives in conditions similar to those enjoyed by its cousin, the Pacific madrone (*Arbutus menziesii*)—sunny sites, with well-drained, low-fertility soils—it can be grown in richer loam soils and some shade. The trunks of older specimens take on a gnarled, deep burgundy, madrone-like appearance.

Kinnikinnick (*Arctostaphylos uva-ursi*)

This evergreen species is native over a very broad range across the northern hemisphere. In the Pacific Northwest, it grows wild from



Alaska to the San Francisco Bay area. This workhorse groundcover remains a strong choice for Northwest gardens. It forms a low, wide mat of small, glossy, paddle-shaped, dark-green leaves that turn reddish-purple in fall. Clusters of bell-shaped white or pink flowers appear in spring and develop into handsome, bird-friendly red berries that persist into winter.

Bottlebrush (*Callistemon* species)

This genus of shrubs from the myrtle family is native to Australia and ruggedly drought tolerant in full sun. All species have narrow, pointed, evergreen leaves and produce stunning, bottlebrush-shaped flowers on the previous year's growth. The most commonly seen species here, *Callistemon citrinus*, can be grown as a large

shrub or trained from a young age into a small tree, around 20 feet tall. It offers vivid-green foliage and bright-red spring-to-summer flowers. *Callistemon linearis* var. *pumila* is a medium-sized shrub with arching branches and crimson summer blooms. *Callistemon salignus* has willow-like foliage with pale, creamy flowers. Several more forms can be seen in the Australia Entry Garden at Pacific Connections in the Arboretum.

Hardy Fuchsia (*Fuchsia magellanica*)

This native of southern Argentina and Chile has proved long-lived and reliable in Northwest gardens. It performs well in sun to light shade on fertile, well-drained soil, and it grows back strongly from the roots when knocked back by a

OPPOSITE LEFT: *Arctostaphylos densiflora* 'Howard McMinn' is one of our most popular and dependable manzanitas.
(Photo by Christina Pfeiffer)

OPPOSITE RIGHT: The bright-red bottlebrush flowers of *Callistemon citrinus*. (Photo by Christina Pfeiffer)

ABOVE: *Garrya x issaquahensis* blooming in the Witt Winter Garden at the Arboretum in early February.
(Photo by Niall Dunne)



cold winter or from drastic renovation pruning. Hummingbirds are drawn to the drooping, red-and-violet flowers all summer long. Deciduous in our region, the plant's arching stems—with their light, peeling bark—add winter interest.

Silktassel (*Garrya* species)

Several species and cultivars of *Garrya* are featured in the Arboretum's collections, most notably in the Witt Winter Garden. Native to the Pacific Northwest, these large, broadleaf evergreen shrubs are highly drought tolerant. The leaves are roundish, with wavy margins. Striking, long, pale-green catkins appear during winter. Male plants and cultivars such as 'James Roof' and the hybrid 'Issaquahensis' produce especially long tassels. Best planted where it has lots of room to spread, the plant can also be trimmed as a hedge. Prune immediately after flowering to retain the best bloom performance.

Crape Myrtle (*Lagerstroemia*)

Here is a tree for all seasons: rich-green, small leaves, large floral trusses on new wood

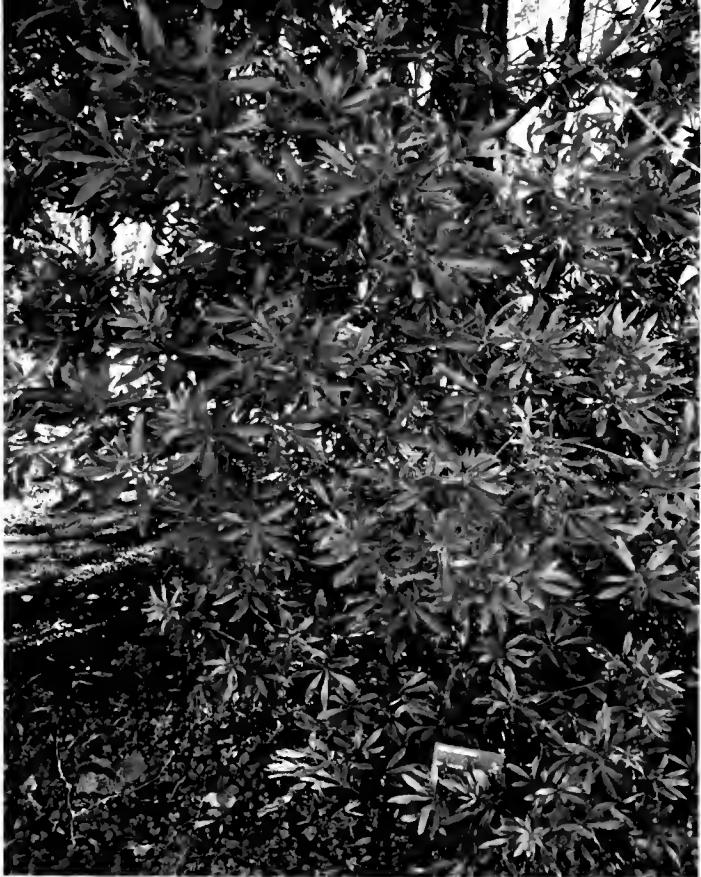
in late summer, brilliant red-to-orange fall color, and mottled, peeling bark in winter. New cultivars (hybrids of the Asian species *Lagerstroemia indica* and *L. fauriei*) introduced by the U.S. National Arboretum are reliable performers. Two of these cultivars, 'Natchez' and 'Muskogee', can be seen near the Visitors Center in the Arboretum. A broad variety of cultivars are on display at the far east parking lot at the Center for Urban Horticulture. Crape myrtle is a great plant for those warm micro-climate spots in the garden. It performs well in sandy loams to clay soils with good drainage and is best grown with lower nutrients.

Mahonia (*Mahonia/Berberis* species)

As a group, all of the native and ornamental forms of *Mahonia* show excellent drought resiliency. *Mahonias* are best grown as understory plants in light shade and well-drained soils. All have evergreen compound leaves with spine-tipped lobes and produce lovely, dense spikes of yellow flowers. Readily reaching 10 feet in height, winter-blooming *Mahonia 'Arthur Menzies'* is probably the tallest. Our native *Mahonia nervosa*,

TOP LEFT: Fall foliage on a 'Muskogee' crape myrtle in the Arboretum. (Photo by Joy Spurr)

TOP RIGHT: *Mahonia x media 'Arthur Menzies'* blooming in the Winter Garden at the Arboretum in January.
(Photo by Niall Dunne)



longleaf mahonia, has a stoloniferous habit and grows to just two or three feet tall. It blooms between April and June and then develops waxy blue berries in late summer. The rich, glossy green leaves turn purple in winter. Some taxonomists now consider *Mahonia* plants as part of the genus *Berberis*, the barberries. Deciduous and evergreen forms of barberries are another top choice for long-term performance and tolerance to warm and dry growing seasons.

California Wax Myrtle (*Morella/Myrica californica*)

Native to the Pacific coast, from southern Washington through California, this broadleaf evergreen is often used in screens and mass plantings. Left to assume to its natural habit, it grows well into a small, 15– to 30-foot tree, with a loose, open crown. It has pale bark and narrow, glossy, two- to four-inch leaves. The late-spring flowers are nothing to write home about, but the dark purple fruits that appear in fall are very appealing to birds. California wax myrtle does best in full sun or partial shade and can handle damp spots and summer drought.

Evergreen Oaks

(*Quercus garryana* and *Q. ilex*)

Oregon white oak (*Quercus garryana*), or garry oak, is being more broadly planted in the Puget Sound region. Young trees can take on an irregular form, while mature trees grow to 40 feet or more and develop a broad crown. The rich-green, round-lobed leaves bear a rusty down on their undersides. Garry oak is best grown on well-drained, sandy soils. The Holm, or holly, oak (*Quercus ilex*) is a Mediterranean native that has long performed well in Seattle as a street and garden tree. It grows 30 to 40 feet tall and wide. The leaves have a narrow, oval shape with a pointed tip; their downy undersides are gray to yellow. Both of these trees bear relatively small acorns. ~

CHRISTINA PFEIFFER is a horticulture consultant, educator and ISA Certified Arborist with over 35 years of experience. She is author, with Mary Robson, of “Pacific Northwest Month-by-Month Gardening” (Cool Springs Press, 2017) and also serves on the “Bulletin” Editorial Board.

TOP LEFT: Evergreen foliage of the California wax myrtle. (Photo by Daderot/Wikimedia Commons)

TOP RIGHT: Oval, evergreen leaves of the holly oak.
(Photo by Liné1/Wikimedia Commons)



Hidden Treasures of the Arboretum The Maytenus

TEXT AND PHOTOS BY WALT BUBELIS

When I first came to Seattle, I heard about an interesting and—for the Northwest—unusual evergreen tree growing in the Arboretum. It was a mayten tree, *Maytenus boaria*, from South America, and I found a specimen just north of the old holly collection. It was a graceful plant, about 25 feet high, with nicely textured foliage and a pendulous form reminiscent of a small, compact weeping willow. The small, elliptical, slightly

toothed, light-green leaves were widely spaced along thin, drooping branches.

The tree I saw is no longer there, due to construction in the Pacific Connections Garden. But the Arboretum has 10 other specimens, some of them dating back to the late 1940s. A cluster of older specimens can be found along the upper Lookout Loop Trail by the Camellia Collection (close to the *Polyspora* that I wrote about in the Winter 2016 edition of the “Bulletin”).



A pair of mayten trees growing closely together by the lower lookout trail in the Arboretum. (Photo by Niall Dunne)

INSET ABOVE: A close-up of the mayten tree's nicely textured evergreen foliage. (Photo by Niall Dunne)

INSET BELOW: A photograph of a mature mayten tree. (Photo by Niall Dunne)



Unfortunately, they are tucked back in among some large rhododendrons in the dense shade of mature native conifers and so are difficult to distinguish and appreciate.

A better viewing place is the small open area directly in front of the semi-circular bench memorial to Anna Thomsen Milburn, on the lower Lookout Loop Trail, in the Birches and Poplars Collection. Two mayten trees are growing there, very tightly together next to some large

Japanese birches (*Betula apoensis*). Sourced from the Morton Arboretum back in 1948, they are about 20 feet high and display some lovely cascading foliage. But, because of their proximity to one another and the birches, it's hard to get a proper sense of the overall shape of the tree.

Arthur Lee Jacobson's book, "Trees of Seattle," notes the location of other, isolated specimens around the city. More solitary trees, such as those at the Good Shepherd Center and the Oceanography Teaching Building on the University of Washington campus, give a better idea of this plant's value in the landscape.

A Sun Lover

The mayten tree is native to Chile, Argentina and Peru. "Mayten" come from *maitén*, the name given to the tree by the native Mapuche Indians of Chile. (The species name of the tree, *boaria*, refers to cows—bovines—which like to eat the foliage.) The mayten tree favors the waterways of arid and semi-arid landscapes in its home range. Though it grows best in moderately moist, sandy loams, it is tolerant of low-water sites and many soil types. It is also free of major insect and disease problems.

It's a sun-loving plant, as I found out from personal experience. Many years after my first encounter with the mayten tree, I saw the plant for sale at the Pat Calvert Greenhouse in the Arboretum and purchased one. I planted it in deep shade in my garden. Disappointingly, my little plant didn't put out much upward growth, but it did start sending out runners. Eventually, I dug up one of the rooted pieces and planted it in a much sunnier spot. What a difference! Though it has experienced the same soil and moisture conditions (sandy loam, minimal water after planting), the sunny specimen, at 15 feet, is now three times higher than the other. It, too, sends out runners, which I dig and pot up for future gifts.

Exposure to light not only dramatically affects the growth performance of the mayten tree, it also alters the appearance of its bark. In shade, the trunk stays dark gray and smooth, while in sun, the trunk is slightly furrowed and either gray or light brown. The bark of older specimens all

eventually develops a furrowed, corrugated look, but this usually takes a lot longer to develop in shade-grown trees.

So what's not to love about this plant? You may have noticed that I haven't mentioned anything about the flowers or fruit. Being a member of the spindle tree or bittersweet family, Celastraceae, the mayten tree has small, inconspicuous flowers similar to other members of its tribe, such as *Euonymus*.

The tiny flowers appear in early spring and develop into small, reddish-green, capsular fruits that each contain one or two seeds enclosed in a fleshy, deep-red aril. The seeds burst out of the fruit in late fall and are easy to propagate. They are also used to make both a varnish and an edible cooking oil! Other utilitarian uses for the tree include the manufacture of excellent tool handles from its hard wood and the production of a delicious honey by bees.

In the Home Setting

Mayten tree is extensively used in California landscapes, both as a street tree and as a taller element for providing light shade to lower plantings. Think weeping willow, but evergreen and smaller (most plants in cultivation don't exceed 30 or 40 feet in height), and without the invasive roots or brittle branches. As far as hardiness, the

tree is given a USDA rating of 9 to 10, but obviously it has been doing well up here in Zone 8 for decades. Sheltering the tree from cold, drying winter winds helps it get established.

The strongly pendulous cultivar, 'Green Showers', is what is typically sold in the trade. There are three specimens of this cultivar growing to the west of the Pacific Connections Garden meadow, on the trail heading down towards the north end of Azalea Way. They are relatively recent additions, dating back to the late 1970s and 1980s. At the moment, access to the trees is closed off due to construction of the new Arboretum Loop Trail.

You can find the straight species for sale locally, as well. The Pat Calvert Greenhouse still sells the tree and, as I write this, has a whole flat of young specimens potted up, ready for planting. The Desert Northwest (profiled in our "Summer 2016" issue) also sells mayten trees in one-gallon pots. Even if you have to start small, you'll find much to enjoy with this elegant, pest-free tree suitable for both current and future, warmer landscapes. ☺

WALT BABELIS is a Professor Emeritus in the Horticulture Department at Edmonds Community College. He is also a member of the "Bulletin" Editorial Board.

A Medicinal Genus

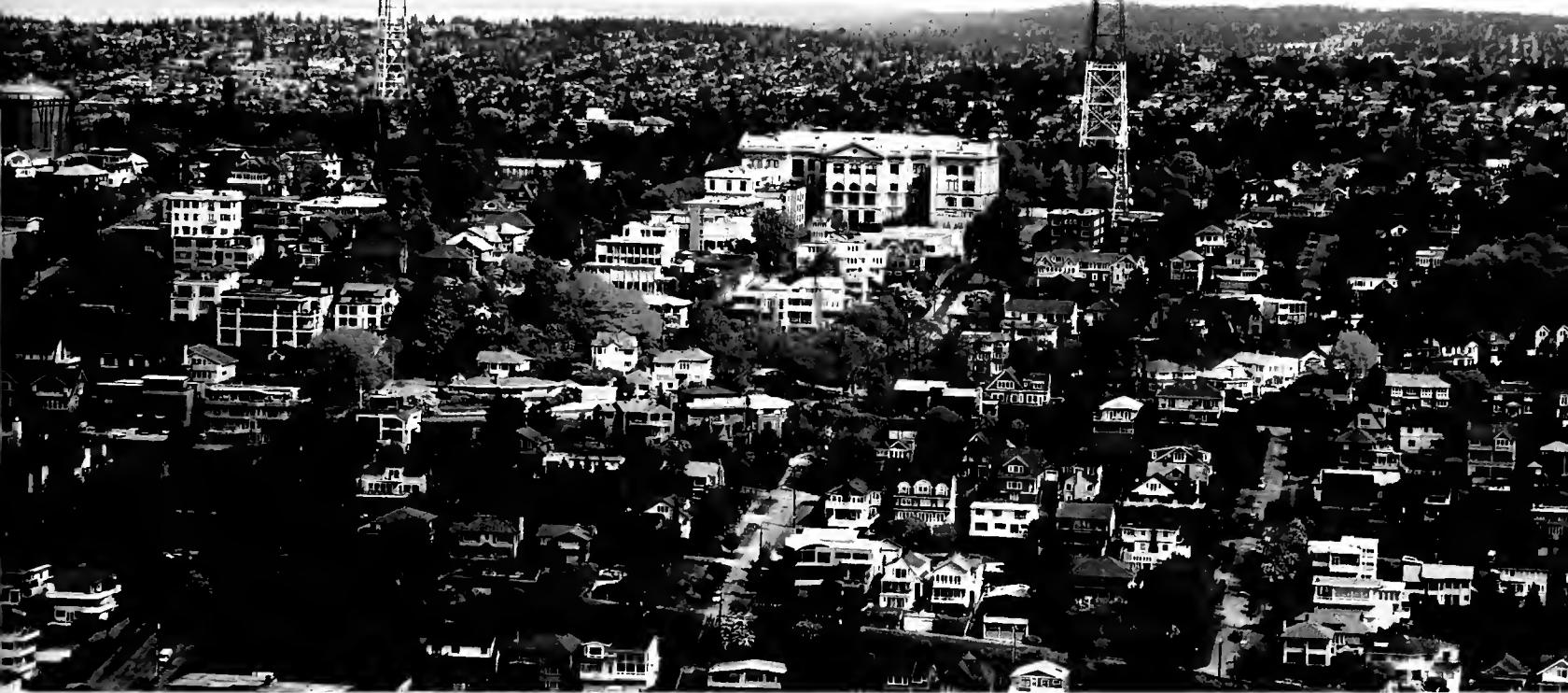
The genus *Maytenus* contain between 200 and 255 species distributed throughout Central and South America, Africa, Southeast Asia, Australasia and Micronesia. *Maytenus boaria* and *M. magellanica* are the two hardiest of this mostly tropical group. *Maytenus magellanica* is a much smaller evergreen shrub or tree than *M. boaria*. Having originated in harsh conditions of the Patagonia steppes of Chile and Argentina, it would likely adapt well to the Puget Sound area.

The tropical species are used for a variety of traditional herbal medicines. A decoction of the bark of *M. krukovi* of the Amazon rainforest has been used to relieve back pain, arthritis and rheumatism. Two African plants, *M. heterophylla* and *M. senegalensis*, are used for infectious and inflammatory treatments. Other species are being studied for their pharmacological properties.

Some South American tropical *Maytenus* species are mixed with other plants to create a brew called ayahuasca, a counterpart to the Euro-Asian hoama discussed on page 25. The brew is used in traditional spiritual ceremonies in Peru, Brazil, and other northern South American countries for divination and healing purposes.

No Place for Old Trees?

Preserving Seattle's Green Infrastructure During the Development Boom



BY CASS TURNBULL

Editor's note: Cass Turnbull has been an important voice for tree preservation in Seattle for many years. The opinions stated here may not necessarily reflect those of the Arboretum Foundation.

*I*t's no secret that Seattle currently is one of the country's top boom towns. Strong job growth in the tech industry is attracting many new residents to the region and has created a development frenzy downtown and in surrounding neighborhoods. The real estate market is on fire, and in many residential areas, small, old, single-family homes are being replaced by low-rise, multi-family units or larger, more-modern homes to meet demand. When thoughtfully done, urban redevelopment can be a good thing. But one of the silent casualties of the new upsurge in construction is our urban forest. We don't have adequate protections or regulatory enforcement for our existing trees. Moreover, we haven't adopted

policies and mechanisms to reach our future canopy coverage—or even open space—goals. As a result, our trees are suffering—and, by extension, so are we.

When I express my concern over how many trees are being cut down as a result of the boom, people often reassure me that replacement trees will be planted. "Trees grow back," they say—but it's not as simple as that. What they're missing is that it will take many years of growth before the new trees can accurately be called replacements. In the interim, the full environmental work once done by big trees won't be accomplished. According to the American Forestry Association, one young or small urban tree does 75 percent less environmental good than a large tree.

Nobody knows if the replacement trees will survive either, or what kind they'll be. These days people plant small-maturing trees where once they (or sometimes nature) planted large-growing ones. That's often because many folks are under the mistaken impression that small trees take up less room in their yards. (The lower

ABOVE: Queen Anne Hill in Seattle, a city famed for its "emerald" tree-covered neighborhoods.
(Photo by M.O. Stevens/Wikimedia Commons)



branches and canopy of a small tree can actually take up more room at ground level compared to the trunk of a large tree, which can be limbed up.)

Some of the folks choosing to plant smaller-sized trees are landscape architects working on large projects that could obviously accommodate big trees, including our big conifers—the environmental heavyweights of the urban forest. Those conifers, along with our giant maples, are iconic to the Northwest. But Seattle seems to be slowly transitioning to a town of many small trees—purple leaf plums, Bradford pears, dogwoods, and cherries. The plant palette is widely shared among cities in the USA and, though pretty, it doesn't reflect the unique identity of our Evergreen State.

Tree Preservation Is Land Preservation

Most importantly, there may not be enough room left in the future to support all those replacement trees. The total amount of urban tree canopy that's possible for Seattle is not a function of *how many trees* we plant. Ultimately, it is dependent on *how many planting spaces* will exist after every property in Seattle that can be built on has been built on, and built to the maximum lot coverage allowed by our building codes. This is called a "total build out," and it is inevitable—given enough time and a big enough population.

According to the City¹, it takes a minimum of 300 to 900 square feet of permeable land to host one medium sized tree. (Permeable land is defined as land that absorbs rainwater rather



than causing it to runoff.) Even in the unlikely scenario that you completely fill a 900-square-foot yard with many small trees, in the end, you will not derive the same amount of benefit—in terms of tree canopy, energy-use reduction, habitat enhancement and air pollution mitigation—as you would from a single, medium-sized tree. City departments are required to plant two trees for every one taken down during construction projects, but without an equivalent amount of permeable land to support them, these trees can never replace the one that's lost.

So, for me, tree preservation is land preservation. I consider "open space," "permeable land," "green space," "planting spaces" and even "urban forest" to be roughly synonymous. It's true there are exceptions. One can plant trees on impermeable land, such as on top of buildings and in hardscaped plazas, but these amount to little in the big land-use picture.

As building footprints grow larger, the urban tree's habitat is diminished. Our current habitat reduction is the result of several different forces—the building boom itself, new policies concerning environmentally critical areas, zoning and code changes, and new building technologies that enable construction on steep slopes, as well as people's and builders' preferences.

Open Space and Our Canopy Commitments

With the amount of tree canopy being dependent on how much open space is available, it behooves us to see where Seattle's open space currently is.

TOP LEFT: A typical single-family detached home with lots of green infrastructure in the Ballard neighborhood of Seattle.
(Photo by Niall Dunne)

TOP RIGHT: One of the new low-rise, multi-family residences in Ballard, with little room for big trees. (Photo by Niall Dunne)

There are two kinds of open space: *private open space* and *public open space*. Private open space is owned by businesses, industry, single-family homeowners, etc. Private land has about 58 percent of Seattle's trees. In contrast, public open space is owned by any one of several government agencies and it hosts the remaining 42 percent of the city's trees. Roughly half the public open space trees are in our parks, while most of the other half are found in public rights of ways, such as parking strips and medians.

Private open space is mostly made up of back yards, the required landscaping areas of commercial and apartment properties, vacant lots, and privately owned greenbelts. These are the places in our city that are undergoing the most dramatic changes, and they happen to be where most trees are located.

Most of Seattle's tree cover (63 percent), as well as most of its land (56 percent), is in residential neighborhoods zoned for single-family, detached homes. That's more than the next three largest land-use zones combined. (Those three zones are multi-family, industrial and parks, which together account for only 32 percent of the land and 33 percent of the tree cover.)

To deal with Seattle's rapid population growth, the City has looked at relaxing the rules about building in single-family zones and is planning to change some single-family zones into low-rise residential zones around some of our "urban villages" (see below). At the same time, we have made short- and long-term commitments to increasing Seattle's canopy cover.

Seattle land is already 62 percent impermeable. That means that almost two thirds of the City is covered in roads, buildings and driveways—a scary figure in my book. Satellite data from 2007 showed Seattle's canopy cover at just 23 percent (down from 40 percent in 1972). We have a stated goal of expanding canopy cover to 30 percent by 2037², as well as a long-term, aspired goal of 40 percent canopy cover³.

But how much open space will be left after a substantial or complete build out? How much permeable land are we losing now? Where are we losing it? And how fast? By answering these

questions, we will know if there is even a possibility of meeting our canopy goals in the future.

Losing Private Open Space

It's estimated that our City will be adding 120,000 new residents and 70,000 housing units to Seattle by 2035. Even if we were to add those people to the City without reducing the amount of open space—say by building higher buildings on existing building footprints—problems would arise. Many of these new folks will, in fact, be living in tall buildings with little private green space. They will head to the Arboretum to get their hit of nature, to Greenlake to run, to Cheasty Greenspace to mountain bike, and so on. We'll see more crowded parks, with increased maintenance needs.

If we add 120,000 more people, but reduce the total amount of private open space, the problems will be more serious. People living in the new urban McMansions and townhouses will have less backyard land for their kids and dogs to play in, to plant vegetable gardens, to build and repair things, or to have friends and family over for a summer barbecue. They, too, will head for the parks, and they will drive long distances—burning fossil fuel—to enjoy more green space in the country.

Decreasing private open space, permeable land, and canopy cover in the City will result in other environmental problems as well, such as increased air pollution, increased polluted runoff in the Puget Sound, and higher ambient temperatures (from the "urban heat island effect").

The loss of private open space can come in many forms, not just small homes being replaced by ones with larger footprints. Proposals to relax the restrictions for building backyard cottages on single-family lots, for example, could lead to a further loss of tree canopy—even when the percentage of allowable lot coverage remains the same for two buildings as it does for one. We're also replacing required landscaping for commercial and apartment buildings with balconies, green roofs, and scores of unused communal patios that typically provide minimal ecological services. And now that the technology exists to

build on very steep, wooded slopes, we're seeing new private homes appearing in these "last frontiers" of urban greenspace. For all of this, trees are being cut down in great numbers, and the land that once hosted Doug firs, red cedars, bigleaf maples and madronas is being covered up, never to grow another one.

A Need for New Parks

To make up for losses in private open space, we could launch an effort to help the Parks Department acquire as much public land as possible. New parks would be used to meet the increasing recreational needs of the public, and to ensure the City remains livable, economically sustainable, and environmentally responsible.

However, the Parks element of our new Comprehensive Plan⁴ being voted on this fall will not do that. Early planning documents focused on using *qualitative* goals—such as increasing the uses of existing parks, more access to parks, and improved maintenance of parks—and sought to restrict *quantitative* goals.

We've already watered down the metrics we use to determine how much public open space should be allotted to each resident. Seattle's original Parks' metric was based on a widely used one published by the National Recreation and Parks Association, which recommended one acre of public open space per 100 residents. In the Parks Department's 2006 Development Plan⁵, we changed the "acceptable" goal to one-third acre per 100 people. We further adjusted the metrics by varying them according to City land-use areas. For example, Seattle's "urban villages" (mixed-use business and residential hubs, such as downtown Ballard and North Beacon Hill) need to have only one acre of park space per 1000 people. One acre is about the size of a football field without the endzones. Good luck throwing your Frisbee or watching for birds in that kind of space on a busy day!

These urban villages are the places that should have MORE open space, not less. They desperately need the mitigating effects of trees because of all the impermeable, reflective concrete they're introducing and the attendant

strain they're putting on the City's environment and infrastructure. And the people in these villages need the amenity values of parks because they have little private open space of their own. With no nearby communal areas to socialize, how will they meet their neighbors? If the snow falls, where will their kids build a snowman? Where will seniors go for their morning health walks, or the would-be urban gardeners plant their peas?

There are now in Seattle literally thousands of people who are not within recommended walking distance of a greenspace. Low-income folks are among the most adversely affected, not only because of their historical lack of access to open space, but because they can't afford to go play a round of golf, drive to the woods for a day hike, or send their kids to camp.

As a city, we seem to have resolved ourselves to adding minimal green land for new parks. We have opted to make many small, public squares constructed out of concrete, rather than green pocket parks because we think the latter are not cost effective to maintain. For the next four years, we have budgeted only \$2 million for parks land acquisition to service the entire City. We're even selling off public lands that might be used for parks (for example, the Seattle City Light former substations, or "surplus properties") to developers.

Why is this happening? Lack of funding has always been a problem for green things. There was hope that once we proved the utilitarian—or dollar—value of trees and green space, this pattern would change. We now know that trees do not cost the City money, they save the City money (preventing health problems, for instance). But the change hasn't happened, perhaps because these dollar values are not represented in governmental accounting or budgeting systems. Like the cash register that has no place to put a one dollar coin or a two dollar bill, our governments have no place to put nature's values.

At least not yet. There is currently an effort to incorporate natural asset accounting into Seattle's financial system. If successful, it could be a game changer.

A Smarter “Smart Growth”

Another reason for the general lack of support for expanding green infrastructure is our adoption of the “smart growth” philosophy of urban planning, or at least the way we practice smart growth locally. The philosophy is elegant in its logic and inspirational in its goals. It has enjoyed broad support from environmentalists, affordable housing organizations, young urban professionals, city planners, and developers. The conviction is that it is worth it to save the environment “out there,” in the woods, farms and fields even at the expense of green space environments in the City.

It may well be so. The theory goes that by increasing the density of city, we prevent the suburban sprawl that eats up the undeveloped countryside, destroying its ecosystems and wasting resources. With density, people will live where they work (rather than commute to Seattle from the suburbs), and by doing so will lower their carbon footprint—all quite plausible.

In Seattle, there’s an assumption that density must be accomplished by building on all available private open space within the City. Some growth advocates even consider it selfish and environmentally irresponsible to possess backyards or to want land to be used as a park instead of for more housing. But this is a false dichotomy. We can achieve both density goals and green space goals by “building up, not out” within our City—and not just within Washington as a whole, as directed by our state’s 1990 Growth Management Act.

Whether you cover the land with all low buildings or all high ones, if it is to the exclusion of greenscapes, it will eventually look like the surface of a Star Wars Death Star. No one wants that. Green space is essential to the success of the smart growth movement. Around the world many cities have managed to retain, and some even to add, large quantities of green space during periods of rapid densification.

There are concerns that because only a part of the smart growth strategy is being incorporated here it may not be working as predicted. Without the concurrent and promised “infrastructure”—such as green space, transit, improvements to schools, low-income housing,

and social services—there is the possibility that a great many people will flee the dense city for places that do provide it. Back to the “burbs” and small towns, where there are still yards for kids to play in and homes that are affordable! Those people would commute to Seattle for the jobs, defeating the purposes of the plan.

These days, I am often reminded of a sign I once saw that said “In theory, theory and practice are the same. In practice, they are not.” Only time will tell whether or not smart growth works as promised.

By then, who can say what Seattle will look and feel like? Will we have access to the beauty and solace of uncrowded green spaces? Or will they become the property of the few who can afford it, like the water views in Seattle that were once seen everywhere. When we look across the City to the next hillside, will it be blanketed by green trees with human-made structures visible here and there, or will it be the other way around? Will there be an Emerald City or something completely different? ~

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5. “Seattle Parks and Recreation 2006 Development Plan” (available online at <http://www.seattle.gov/Documents/Departments/ParksAndRecreation/PoliciesPlanning/2017Plan/Plan2006.pdf>).

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Adapting the Garden to the Coming Conditions

BY NIALL DUNNE

In Part 1 of this article (see the “Bulletin,” Fall 2015), I wrote about simple practices you can adopt to shrink the carbon footprint of your garden and play a part in reducing the severity of climate change in our region. The following tips will help you prepare your garden for the changes coming our way and that we’ve been getting a taste of in past few years: hotter, drier summers; warmer, wetter winters; more frequent fall and winter downpours; a longer growing season; and new pest and disease problems. As with the tips in Part 1, the ones listed below primarily come from the sustainable-gardening toolkit, which focuses on creating resilient, low-maintenance, and nature-friendly gardens.

Protect and Enhance Soil Organic Matter

The foundation of a healthy garden is healthy soil, and the cornerstone of healthy soil is a diverse soil food web and an adequate supply of humus, or decayed organic matter (see Part 1). Beneficial soil organisms form humus through the decomposition of organic matter residue (such as dead plant material), recycling valuable plant nutrients back into the soil in the process. They also help suppress soil pathogens. Humus acts like a sponge, storing water and nutrients, while keeping soil porous and well-draining. If your soil is rich with life and humus, then your plants will be better equipped to handle the new extremes of drought and flooding, and less susceptible to soil-borne diseases. Mycorrhizal fungi and other soil microorganisms can also help plants be more resilient to drought and other stress factors.



To preserve and maintain your soil’s store of organic matter—and promote a thriving soil food web—apply compost or coarse organic mulch once or twice a year to replace what has decomposed. Leave plant debris such as leaf mold, and fallen leaves and twigs, in place to nurture a diversity of organisms in your soil. Protect soil organic matter and biota by avoiding practices such as tilling and double digging. Avoid gardening in wet conditions, which can cause soil compaction and damage soil structure. Instead of trenching your irrigation lines underground, install surface drip tubing.

Apply an annual layer of coarse-textured mulch, such as arborist wood chips, on your beds to protect the soil from erosion and compaction by rain fall, and also to capture and store rainwater for use by plants in dry periods. Create a canopy in your garden with shade trees, shrubs, and groundcovers to buffer air and soil temperatures, as well as to protect soil from battering by rain.

Grow a Diversity of Adapted Plants

New research suggests that elevated carbon dioxide levels in the atmosphere may make some plants more tolerant of droughty conditions. (Less demand for CO₂ will mean less need to open leaf pores, and so less water loss from evapotranspiration.) However, it’s uncertain how—or even if—this might apply to plants in our region. A much safer bet is to grow plants that are able to tolerate hotter, drier summers. (See “Trees and Shrubs for a Warmer Seattle,” page 3, and “The Mayten Tree,” page 8, for suggestions.)

This is not to say that you should rip all the plants out of your garden right now and replant it

with cactus. (Though if you have a very exposed site with fast-draining soil, hardy succulents and other xeric plants make great choices—I've seen prickly pears thriving in sunny rock gardens in my neighborhood.) Instead, carefully observe your garden in the coming years to see what's working and what's not, replace most dying plants with drought-tolerant varieties that we know already do well here, and cautiously experiment with unfamiliar plants from historically warmer regions. Keep an eye out, too, for new, more heat-tolerant introductions of your favorite garden plants.

In ecology, it's a general rule that biodiverse plant communities are more resilient—that is, they are better able to recover from a disturbance (such as a drought). This applies to the garden, too: Plant a diverse suite of tough, low-maintenance plants so that if something fails, there's plenty of built-in redundancy in your design to absorb the failure. Large monocultures should be avoided—another good reason (among the many) to cut back on or eliminate lawn.

As we've seen in the last few years, a warming climate can extend the growing season earlier and later into the year. This can create some exciting new opportunities for gardeners, but be mindful of damage to premature buds from late frost. Locate tender plants in warmer microclimates of the garden, rather than, say, north-facing or low-lying spots.

Channel Water to Plant Roots

With hotter, drier summers, plants will need more help meeting their water needs. As mentioned above, make sure that your soil has a good store of organic matter, which holds onto water and gradually releases it to plant roots. Also, a good drip-irrigation system will deliver moisture directly and as needed to the root zone of your plants, while conserving your water supply.

In winter, we'll see less of the beneficial "slow-soak" style rain and more heavy downpours. Though the total rainfall amounts in our region may not change too much, runoff will be more severe, and you may actually see less infiltration of water into your garden soil. Adapt your

garden for this by using methods for slowing and capturing rainfall and reducing erosion—such as green roofs, rain barrels and cisterns on gutter downspouts, rain gardens, and bioswales.

When establishing plants, water them deeply but infrequently to foster deep root systems, which will better enable them to resist drought. Plant in the fall, so that your new additions will receive a good supply of rain, and you can save on your water bill. Always use the "right plant, right place" mantra when selecting plants for the different microclimates of your garden.

Watch for New Pests and Diseases

A longer growing season and warmer winter will create interesting opportunities for growing new plants and crops, but it will also open up doors for pests and diseases. Some bad bugs, for instance, will benefit from higher rates of reproduction and will be able to fit more life cycles/generations into a growing season. Closely observe your garden to see how your plants are faring, and use sustainable, low-toxicity methods for pest and disease control. Become a citizen scientist and work with your local IPM (integrated pest management) and Extension services to identify newly arriving potential threats in your area.

Provide for Wildlife

The plants in our gardens will not be the only organisms needing to adapt to climate change—so will the animals that reside in or visit them each year. Provide year-round resources and habitat for the birds, insects, mammals, and other creatures that call your garden home. Some animals will need our help migrating to cooler climes, and gardens can provide connections for them across fragmented landscapes. ~

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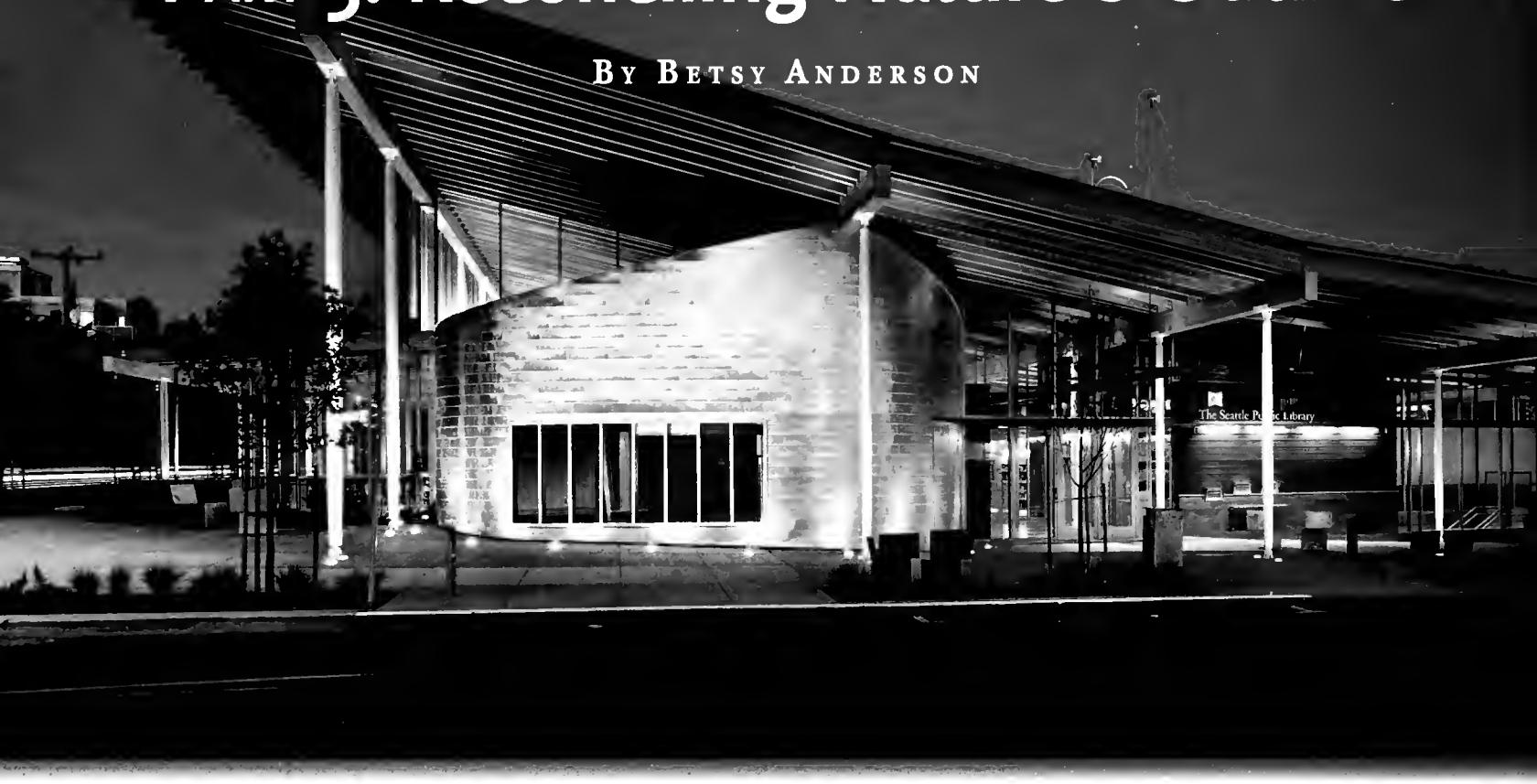
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Reluctant City— A Brief Account of Environmental Design in Seattle PART 3: Reconciling Nature's Outline

BY BETSY ANDERSON



The 1975 opening of Gas Works Park was a defining moment for Seattle's relationship to its civic landscape. Almost 125 years after its founding, the city was finally ready for an overt celebration of its urban identity—in the design of a park that honored both its natural setting and its unforgiving industrial past. Yet in the recent projects mushrooming across town, it is hard to find the legacy of Richard Haag's achievements at Gas Works, or to detect traces of the sensitive, small-scale insertions of Northwest Modernist architects like Paul Thiry and Paul Hayden Kirk. Unlike these nuanced responses to climate, function and history (described in Part 2 of this account), most of the buildings and landscapes emerging around the city are shaping a strong sense of placelessness.

Entire neighborhoods, such as South Lake Union, are appearing almost overnight—changing the horizon, the climate, the very scale and pattern of the city, and the movement of people, water, sunlight and wind therein. Although

some of the former industrial façades have been retained to front the glossy ground floors of new buildings, they stand only one layer of brick or so thick, like a stage set that commodifies—rather than integrates—the laundry or the automobile factory that came before. These are in effect company towns of the digital era, dropped into the center of an already existing city: Food, amenities and outdoor gathering spaces are insulated, intended for those inside and not for a full spectrum of urban participants.

Such wholesale rebuilding rivals the changes wrought in the city by late 19th-century engineers and developers during its first boom period. Like early attempts to remake the face of Seattle (as recounted in Part 1), most of the current reconstruction efforts are heedless of what came before. Within this shifting context, it is especially valuable to recognize those landscape and building designs that are genuine to place. In the years since Gas Works, a small canon of projects has continued to explore and express a reconciliation between Seattle's urban character

The Ballard Library honors the neighborhood's maritime heritage while embracing future change and urban growth.
(Photo by Nic Lehoux)



and its persistent self-image as an outpost at the edge of the wilderness. The projects discussed below are heir to the urban ecological design approach pioneered by Haag and authentically address Seattle's complex relationship with its natural setting, its infrastructure, and its identity as a city.

Water and Watersheds

When looking for the quintessential Seattle, it is always wise to follow the water. The city works as it does due to a constant reshaping of its water courses and soggy verges—to support subsistence, transportation and commerce. Much of this manipulation is unseen, however, mirrored in an underground network of pipes that marshal the movement of water around the isthmus. For this constructed hydrology of storm sewers, sewers and waterlines, we can thank R. H. Thomson and his cohort of hill-leveling, channel-cutting, shoreline-filling engineers. For the increasingly popular decision to release storm water from these pipes—to make it visible as it

travels through the landscape—we might credit Richard Haag and his ilk.

In the decades since Haag developed his storm water plan for Gas Works Park, storm water conveyance and detention have come to play an increasingly prominent role in design everywhere. The Pacific Northwest—especially Portland and Seattle—has become a national leader in green storm water infrastructure, and future landscape historians will likely look back on these developments and consider them a crucial regional contribution to the field.

Seattle is in many ways the ideal testing ground for new solutions to manage urban runoff. Its abundant rainfall, close proximity of sensitive bodies of water, and strong environmental ethic—as well as the obsession with function and infrastructure that have historically characterized its development—all contribute to a design and planning atmosphere that is ever more willing to redefine municipal utilities as systems that can be beautiful as well as utilitarian. Residents of Seattle's Belltown neighborhood, for example, enjoy the work of artist Buster Simpson, whose whimsical compositions call attention to urban runoff. Seattleites in other neighborhoods encounter thickly planted bioswales that slow and clean storm water, such as those created by the Street Edge Alternatives Project, or SEA Streets, piloted by Seattle Public Utilities in North Seattle. Projects such as the natural drainage system at High Point, integrated into a 34-block, mixed-income housing development, address environmental justice and civic responsibility as well as ecological health.

The Cedar River Watershed Education Center

As early as 1991, examples of what is now called “eco-revelatory design”¹ were explored by firms such as Seattle’s Jones & Jones in projects like the Cedar River Watershed Education Center. Although located 30 miles outside the city limits, the watershed education center has been likened to an umbilical cord that supports Seattle’s very existence.² Indeed we are one of the only cities in the country with a water source that does not require filtration. R. H. Thomson himself



recognized the vital resource of the Cedar River watershed, and he was instrumental in setting it aside in 1901.

The idea for a watershed education center emerged in 1988, as part of legislation to better protect the 90,000-acre drainage and promote education.³ The five-acre complex of buildings and landscape together mimic the function of a watershed, while inspiring human engagement. The configuration of the site—including the scale of the five buildings and their arrangement with connecting courtyards—refers to its past as an early 20th-century settlement along the Milwaukee Railroad corridor.

Water moves through the complex playfully and artistically, as it is filtered by the landscape. Arriving visitors—including school groups, tourists and outdoor enthusiasts—are greeted with a stream. Following the stream offers a variety of experiences: enclosed and open, loud and quiet. The structures, too, are integrated into the landscape as water recipients: absorbing rainwater on green roofs, funneling it into cisterns, and rhythmically channeling it into a clearing filled with rain drums. Through a multi-sensory experience, this project acknowledges Seattle as a city with infrastructural demands, while connecting it in a very tangible way to the natural landscape that supports it. The educational component fosters both civic responsibility and environmental stewardship.

Public Resource

We ask a lot of our landscapes today. More than ever before, we expect our designed spaces to achieve multiple functions: They must perform ecologically—cleaning and slowing water, providing habitat, and creating favorable microclimates. They must perform socially—providing public amenities such as food, respite, and beauty. And they must educate—teaching us about our connections to the environment. This emphasis on performance in diverse domains is a key tenet of current design education and practice.

The Watershed Education Center is a fine illustration of this new direction in urban design. Another recent project, the Ballard Branch of the Seattle Public Library, also integrates building and landscape to support the systems and needs of the city and its inhabitants.

The Ballard Library and Neighborhood Center

The Seattle library system in and of itself is a model for democratic urban design. The largest branch library in the city, the Ballard Library and Neighborhood Center, was completed in May 2005 and designed by Bohlin Cywinski Jackson, architects, and Swift Company, landscape architects. From the outset the community was heavily



TOP: Rain drums at the Cedar River Watershed Education Center playfully connect visitors to the water cycle and the importance of the watershed. (Photo by Erik Stuhaug. Seattle Municipal Archives, 134556)

BOTTOM: Photovoltaic arrays and drought-tolerant plantings on the roof of the Ballard Library and Neighborhood Center. (Photo by Nic Lehoux)

OPPOSITE: Periscopes allow visitors to the Ballard Library to see what's happening on the building's green roof. (Courtesy of Bohlin Cywinski Jackson)

involved and wanted this to be more than a place to store and circulate books.⁴ The new library was envisioned as a social and physical hub, a catalyst in a new municipal plan for Ballard that includes additional parks, public art, museums, and eventually a light rail station.

The architects embraced dual goals of sustainability and education and wanted the public to be able to see and understand how the building works.⁵ This included an improvement in storm water infiltration, increased habitat, and the generation of electricity. The building's form is inspired by an upturned boat hull—referring to Ballard's maritime heritage—while its modest scale, and its interface with the sidewalk, are reminiscent of Northwest Modernism. Inspired by a deep front porch, the entrance provides seating and allows for public interaction.

Extensive daylighting studies informed the aspect and size of the windows, while 17 photovoltaic arrays are located on the roof. Members of the public can easily track electricity produced onsite thanks to a large sundial and meters located inside the building, on the windowsills of the children's section.

The great sweep of the roof suggests a new urban landform and is planted with native grasses and sedums that absorb stormwater, provide habitat, and reduce the urban heat-island effect. Before construction, the site—originally a parking lot and a bank—was entirely covered by hardscape. Thanks to the green roof and planting beds, now only 20 percent of the site is covered by impervious surfaces. Any spare rainwater not absorbed by the roof, is stored and used for irrigation. However, the plants are deliberately selected for drought-tolerance and their ability to thrive in a four-inch-deep substrate. The informal, scattered planting pattern makes it seem as if the sedums and grasses have emerged from windborne seeds.⁶

Unlike many other green roofs, this one can be viewed up close by library visitors through an observation deck, and also through a clever series of periscopes located inside the library and sited at heights appropriate for both children and adults. Even the Olympics can be glimpsed



beyond this constructed prairie. The library rounds out its comprehensive list of public amenities by including a Neighborhood Service Center. These satellite city halls are an important resource for civic services and information.

A New Topography

The Ballard Public Library proposes a change in perspective, challenging presumptions about what it means to be a building, roofline, landform and library. A near contemporary project on Elliott Bay embraces this approach even more vigorously, offering yet another study in earth shaping to the city canon of super-sized topographical revisions.

The Olympic Sculpture Park

In 1999 the Seattle Art Museum (SAM) purchased an eight-and-a-half-acre site on the waterfront, in Belltown, to create a long-dreamed-about outdoor sculpture park. For more than 60 years, this spot had been home to a UNOCAL oil storage and transfer facility, and when the operation closed in the 1990s, UNOCAL, together with the state, removed 120,000 tons of contaminated soil. The plan was to sell the site to developers for condominium construction, however—thanks to an energetic fundraising campaign—SAM, in partnership with the Trust for Public Land, was able to purchase the site for the \$17 million asking price.

Thence followed an international design competition, which was won by the New York architecture firm Weiss/Manfredi, with their zig-zag design, famously conceptualized using a



business card sliced in a few key locations. The challenge was to connect the city's urban edge to the waterfront, negotiating a 40-foot change in grade, as well as a busy arterial—Elliott Avenue—and an active railway line, while simultaneously providing an integrated urban platform for the display of art. Salmon habitat also needed to be created at the shoreline, along with a new seawall.

The team developed “a new topography”⁷ to mediate the grade difference and roadways, angling the Z to focus views in key directions: the Olympics to the west, Mount Rainier and the container cranes of the Port of Seattle to the south; and Puget Sound as a lively middle ground. To descend to the water, one passes through three symbolic Northwest landscapes: evergreen forest, deciduous forest, and aquatic shoreline

vegetation with tidal terraces for salmon. Stormwater passing through and over the site is slowed and filtered before it reaches Elliott Bay. Here the transportation infrastructure becomes a feature: The roadway and its cars, the railroad and its trains, and the Sound and its freighters become a dynamic part of the sculpture garden.

Sculpting and manipulating the shoreline edge evokes Seattle's historical earth-shaping practices, including the filling in of tidelands to support industry in the city's earliest years—industry that effectively prevented public access to the waterfront. Rather than perpetuating this practice, the angled descent reconnects the city to its shoreline. But it does so without obliterating the transportation networks that propelled early development, leaping over these past inscriptions in a way that keeps them very much alive.

Not quite landform, not quite architecture, not entirely city, not entirely infrastructure, not entirely nature: This project is more than anything a concurrence in which all the seams and connections are visible.⁸ What is key is that the park is not trying to escape the experience

ABOVE: The Olympic Sculpture Park proposes a new relationship for Seattle and its urban waterfront. (Photo by M. O. Stevens)

BELLOW LEFT: The Space Needle becomes a borrowed piece of sculpture when seen through Alexander Calder's "Eagle," Olympic Sculpture Park. (Photo by Joe Mabel)

BELLOW RIGHT: Seattle Public Utilities' Street Edge Alternatives Project (SEA Streets) conveys storm water through a series of planted swales in North Seattle. (Seattle Municipal Archives, 155521)



of the city. Instead it proposes a distinctly Northwest urbanism, combining a stunning natural setting and infrastructural lifeline with art, public space, and improved shoreline habitat for people and salmon alike.

Though it falls short in revealing the site's toxic industrial heritage, the Olympic Sculpture Park marks a pivotal milestone in Seattle landscape architecture. To return to Jonathan Raban's complaint that urban design features have the tendency to look puny in comparison to Seattle's setting—that "real cities . . . tend to flourish best on flat, or flattish, land that denies the citizen the chance to compare a cathedral with a living forest, or a skyscraper with a 15,000-foot mountain"⁹—here, at last, is a design gesture that is substantial enough to engage with its majestic surroundings. Installations like Alexander Calder's "Eagle" and Richard Serra's "Wake" are consequential enough to complement the monumental borrowed sculpture of the background: the Olympics, Mt. Rainier, and even the 20-story cranes at the port, depending on where you look.

Following Nature's Outline

Emphasizing the visual—as Raban does in his critique—only tells part of the story, for as we've seen, Seattle's landscape history is nothing if not a muscular multi-sensory interaction between land, water, wood and people. This includes the

long-term cleaning of the soil at Gas Works Park; the ongoing education and advocacy required to protect a municipal watershed; the reimagining of a library as an active ecological and social agent; and a reconciliation with past city building practices that leaves space for future action. Will forthcoming efforts, including the long-labored-over waterfront, embrace this heritage and carry it into the future? Only through a careful reading of the place and its participants...

Rather than uncovering an authentic Northwest "style" of landscape design in Seattle, the projects highlighted in these pages suggest that it is more of an approach: one that is interested in how buildings and landscapes work, that reveals ecological and social systems and the city's connection to its environment, and that expresses not only our present-day relationship to nature but also the way that relationship shaped the city—sometimes in violent and dramatic ways. This is an approach that honors distinctive local materials, plants, light conditions and weather patterns; one that is community-driven and democratic, and that increasingly celebrates the urban character of this great jumping-off place to nature. ~

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Notes

¹The term "eco-revelatory design" was introduced by Brenda Brown, Terry Harkness, and Douglas Johnson in 1998 and defined as "a design strategy that attempts to enhance site ecosystems as well as engage users by revealing ecological and cultural phenomena, processes and relationships affecting a site." See Brown, Harkness, and Douglas, "Guest Editors' Introduction," "Landscape Journal," Special Issue 1998, x-xi.

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⁴Kathryn Rogers Merlino. "Ballard Library and Neighborhood Service Center—Seattle, WA." 2008 EDRA/Places Awards with Metropolis Design. "Places," Vol.20, Issue 3, pp. 12. ⁵Ibid., pp. 15.

⁶The American Institute of Architects. "Ballard Library and Neighborhood Center," Top Ten Projects, <http://www.aiatop10.org/node/153>.

⁷Marion Weiss and Michael Manfredi. Quoted in Clifford A. Pearson, "Olympic Sculpture Park." "Architectural Record," Vol 195, no. 7, 2007, pp. 110-117. ⁸Ibid.

⁹Jonathan Raban. "Deference to nature keeps Seattle from becoming world-class city." "Seattle Times," April 4, 2004.



Q&A from the Miller Library's Plant Answer Line

Warding Off the Evil Eye

BY REBECCA ALEXANDER

This regular column features Q&A selected and adapted from the Elisabeth C. Miller Library's Plant Answer Line program. If you'd like to ask a plant or gardening question of your own, please call (206) 897-5268 (UW Plant), send it via the library website (www.millerlibrary.org), or email directly to hortlib@uw.edu.

QUESTION: I heard a news story about children in Afghanistan who try to earn money by walking through traffic, fanning smoke from burning seeds to ward off the evil eye. What plant do the seeds come from? Where does this folk tradition originate, and what other properties does the plant have?

ANSWER: The source of the seeds is *Peganum harmala*, a small, bushy, herbaceous perennial in the Nitrariaceae family with five-petaled white flowers and linear leaves. Its native range is the Mediterranean, North Africa, Arabia and western Asia. It goes by many different common names: Syrian, wild or African rue are the names most frequently used in the English-speaking world, though the plant is distinct from

rue, or *Ruta*. In Afghanistan and Iran, the plant is called esfand. In Pakistan and India, it goes by the name harmal.

The plant has travelled far afield. It's actually on noxious weed lists in the western and south-western regions of the United States. "Weeds of the West" says it was first introduced to North America in 1928. A farmer in New Mexico planted esfand to harvest a dye from the seeds, and it subsequently escaped, invading dry grasslands, rangelands, field edges and roadsides in scattered locations all the way up to Eastern Washington. (The USDA's Plant Database, plants.usda.gov, shows that the plant has been reported in Grant County.) According to an article by Peter Zika in the Winter 2006 issue of

"Douglasia," *Peganum harmala* is on our state's weed monitor list. It is toxic to grazing animals, and to humans. Needless to say this is not a plant you'd want to invite into your garden!

Despite the plant's potential to cause harm, its dark-brown seeds have been used in traditional and folk medicine to treat a wide range of conditions. Smoke produced by burning the seeds has an intoxicating effect. According to Ben-Erik van Wyk's "Medicinal Plants of the World": "It is claimed that the intricate patterns on oriental carpets, as well as the concept of



Photo by Yuri Danilevsky/Wikimedia Commons.

flying carpets, were inspired by the hallucinogenic effects of the seed alkaloids."

How carpet design or flight may be related to warding off the evil eye is as unclear as the thick smoke from a swinging censer, but using smoke from the burning seeds in this way is a well-known Zoroastrian ritual that has been adopted by some Shi'a Muslims. Iranian American chef Sanam Lamborn says both the smoke and the popping sound of the burning seeds have apotropaic properties—that is, they can avert evil influences or bad luck. Anecdotal reports describe the smell of the smoke as pleasant and lemony.

According to "Encyclopaedia Iranica," the burning of esfand seeds appears in early classical Persian literature. The smoke is thought to be protective during vulnerable moments, such as childbirth, circumcision, weddings and funerals. There is also a magical formula to recite as the smoke wafts. One Shi'ite tradition "states that there is an angel in each of the plant's leaves and seeds. Its root drives away sorrow and magic, and the devil stays a distance of seventy houses away from homes in which it is kept." Another unusual use of *Peganum* seeds is the production of invisible ink from the juice of soaked seeds. The heat of a flame near the paper makes what's written visible.

There are a number of linguistic and botanical debates featuring *Peganum harmala*. At one point, some scholars proposed that it was the source of "soma," a ritual drink—and legendary elixir of the gods—of the Vedic religion of ancient Indo-Europe. They based this on the similarity between "haoma" (the root word of "soma") and "harmal."

Peganum might also be the substance "moly" used by Odysseus to fend off Circe's magical powers in Homer's "Odyssey." To quote Galen of Pergamon (129 to circa 200–216 C.E.), "Moly, some call it peganon agrion, others harmola, but the Syrians besasa, and thus the Cappadocians even call it Moly since it has a black root and a milk-colored flower. The property of even the smallest portion of it heats to the third degree, wherefore it cuts and dissolves thick and viscous humors."



Whether the seeds of *Peganum harmala* are used for medicinal, mind-altering or ritual purposes, their relationship to us is as old—and as new—as the world's troubles. They may or may not ward off the evil eye, but they continue to offer some kind of solace. ~

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Award-Winning New Books for Pacific Northwest Gardeners, Part 2

BY BRIAN R. THOMPSON

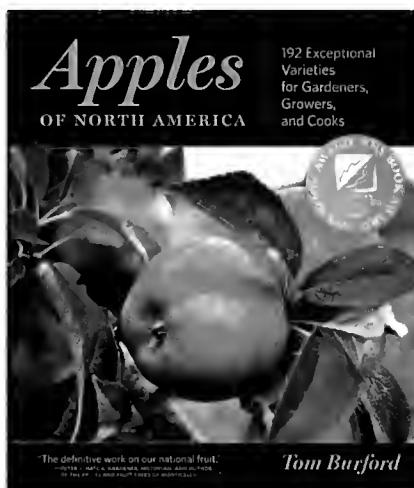
This is the second of a two-part series reviewing recent gardening books that have won or were highly regarded nominees for awards given by the American Horticultural Society and the Council on Botanical and Horticultural Libraries.

Apples

Tom Burford has a goal to restore the apple to near the diversity and prominence it enjoyed in America during the early 20th century, when one nursery catalog alone listed 17,000 cultivars. He is optimistic that this return to greatness is happening. To further the effort, he has selected 200 varieties that he regards as "apples of the real world" (not the supermarket), to feature in his book "Apples of North America."

An A-to-Z encyclopedia of these varieties makes up the heart of the book. All the varieties are of American origin. For example, 'Hawaii' was introduced in Sebastopol, California and has a "distinctive pineapple flavor and is exceptionally sweet when grown in western regions."

'Criterion' was introduced in 1973 from Parker, Washington (south of Yakima), and while it does well in our region, in more humid apple-growing areas, such as the author's home in Virginia, it does not color well and is more susceptible to diseases. It is noted as being one of the best apples for salads, as it does not oxidize quickly after slicing.

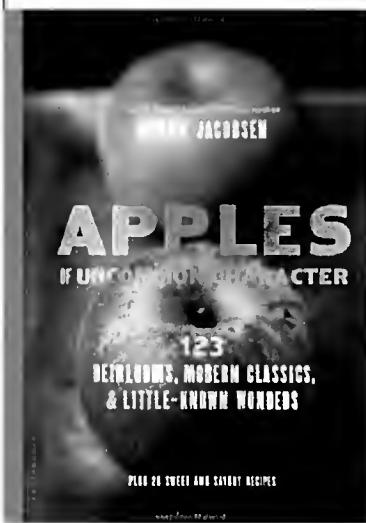


Many apples do not store well but are delicious for fresh eating. Others are noted for baking, pie-making, cider-making or even frying. Some don't look that great. 'Kinnaird's Choice' is mottled red with purple spots, and so would likely be rejected by most shoppers. However, it was a mainstay during the Great Depression because it was dependable and its good flavor worked well for all purposes.

The book concludes with a section on "Planning and Designing an Orchard," a very detailed look at the cultural needs of apples, from planting, propagation (including rootstocks and grafting), and pruning to dealing with diseases and pests. Buford even tells you how to eat an apple properly, a process described as a "mind-expanding experience." He finds it "...mildly irksome to see someone eating an apple while walking down the street, unaware that a body sense event is happening, and perhaps focusing on something else entirely at the time."

More About Apples

As if one excellent new book about apples wasn't enough, along comes "Apples of Uncommon Character," by Rowan Jacobsen. The book's author lives in Vermont and is fascinated by apples: Instead of a grower, he sees himself primarily as an "apple stalker." He credits many professionals for his knowledge, including Tom Burford, who "helped me see the eternal in the apple tree."



As with “Apples of North America,” the author’s compendium of favorite varieties, including some that originated outside North America, forms the principal part of this book. These include ‘Spokane Beauty’: “This Brobdingnagian apple is probably the best to hail from Washington State...yet its fame has not spread beyond the Northwest.” Jacobsen notes that though it may be the largest apple known, it retains its crispness and “...makes wonderfully zippy sweet cider.”

Another favorite is ‘Hudson’s Golden Gem’ from Tangent, Oregon (east of Corvallis). He describes this apple as thinking that it’s a pear—in its shape, coloring, russetting (freckles on the skin) and intense aromatics. “Even the granular texture is pear-like.”

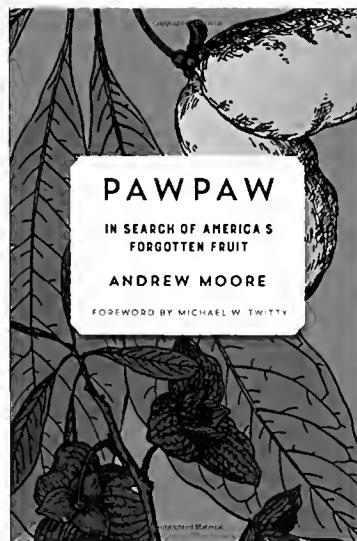
Jacobsen is a well-known food author and he particularly enjoys sharing his favorite recipes for apples, and making recommendations on which varieties to use for each (although he also urges the reader to experiment). While I expected a number of desserts, I was surprised to learn that apples can be used in everything from appetizers to salsa to pot pies.

The photographs of each dish will have you drooling, and throughout the photographs of the apple varieties are engaging and distinctive, with some taken at Harmony Orchards in Tieton, Washington.

Pawpaw

Like the books on apples, Andrew Moore’s “Pawpaw” is the result of an individual’s love for a favorite fruit. However, the object of this love is not so ubiquitous, and while the pawpaw is a native small tree to 26 states in the eastern United States, it is still unfamiliar to most Americans.

To those who love it, *Asimina triloba* has been sadly overlooked. The author compares the fruit to the blueberry, another native that was relatively unknown 100 years ago and was included among the “wild foods that Americans gathered and ate.” The blueberry, thanks to the dedicated work of a handful of enthusiasts, has become a mainstay of the American diet. The pawpaw has lacked such champions.



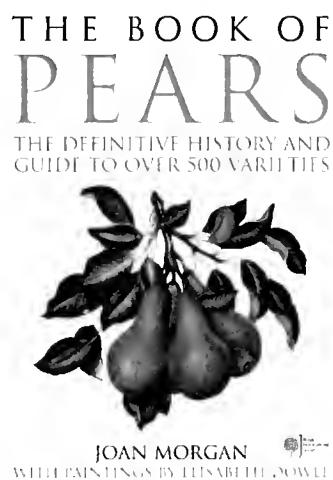
Moore writes most of the book like a travelogue, detailing his visits to growers and enthusiasts throughout the native range of the pawpaw. You get the impression that, but for a few twists of fate, the pawpaw might have come to share the blueberry’s popularity.

While this is not a book about pawpaw cultivation, it will—through its many stories—give you some ideas about how to grow your own and even more ideas on how to prepare the fruit for eating.

There are some suggestions that a pawpaw will grow well here, and one Oregon nursery, One Green World in Portland, is listed as a source. If reading this book whets your appetite, you can visit the nursery this fall for variety tastings (nearly 20 pawpaw varieties are listed on the nursery website, onegreenworld.com) and pawpaw ice cream!

Pears

Unlike the other fruit books in this review, “The Book of Pears” is primarily a meticulous history book. Author Joan Morgan traces the human pursuit and usage of the pear from the empires of Persia, Greece and Rome to the culinary heights of industrial Europe, especially in Italy, France, England and Belgium. This British author does not ignore North America, because from the late 19th century on, the story of the pear becomes global in scope.



Will this book help you with growing pears? It does have a brief cultivation section. But what may be more helpful is the extensive directory of varieties, because the choices you make about these will influence your cultural decisions.

Do you prefer early fruits that often don't hold so well? Or good keepers that develop late in the season? Will these pears be used for eating fresh or for canning, cooking, or making perry (the pear equivalent of cider)?

If you have a tree of unknown variety, you may find the section on pear identification helpful. Presented in a chart, pear varieties are classified by season and by shape. ("Pyriform" is the traditional pear silhouette, but the fruit comes in many shapes.) Further identifiers include color (everything from near white to deep red), size, and the amount of russetting or spotting.

As any fruit shopper knows, there are pears and then there are Asian pears. Both are given some consideration in this book. Each type probably developed separately from two different wild species, one native to modern-day Iran and eastern Turkey, the other to the Yangtze Valley. There is evidence of hybridization between the two forms as early as the fifth century CE, but this possibly occurred much earlier.

Throughout the book are 40 stunning plates showing varieties of pears, including the fruit, both unripe on the tree and ripe and sliced for eating, along with the

fresh leaves and flowers of spring. These artworks by Elisabeth Dowle are worthy of a folio book on their own, as they would benefit from presentation in a larger size.

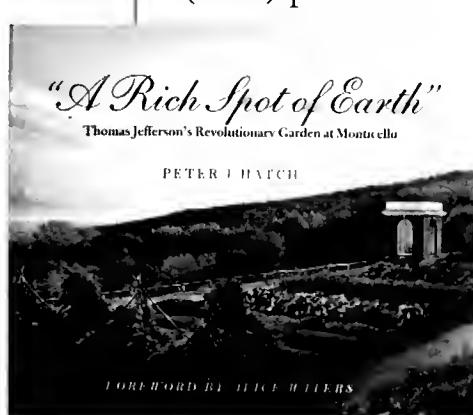
This is an excellent book. I only wish it had been printed in a bigger format, partly for the beauty of the plates, and also to make the minutiae of detail, especially in the directory, more readable.

History Restored

Peter Hatch has been the Director of Gardens and Grounds at Monticello, near Charlottesville, Virginia, since 1977. "The Fruits and Fruit Trees of Monticello," his book from 1998, would be a good addition to this review of fruit tree books. However, I will concentrate on his more recently (2012) published "A Rich Spot of Earth," which

I find the most engaging of the Miller Library's several books on Thomas Jefferson's famous home.

Hatch is a skillful writer, blending much of Jefferson's own words into his narrative. The narrative tells how the

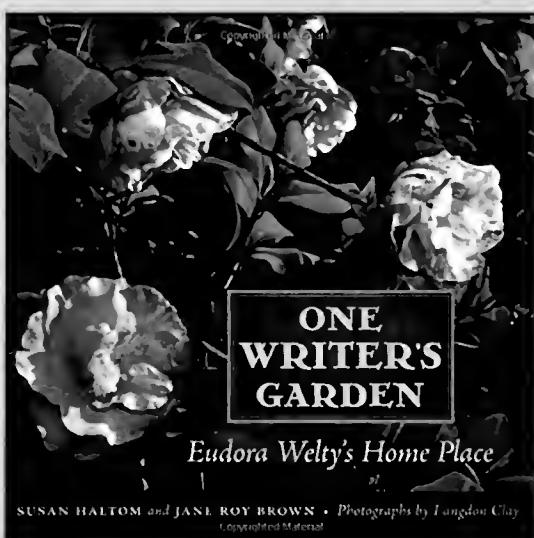


Garden Restoration in Mississippi

Like Peter Hatch at Monticello, Susan Haltom has written about restoring an historic garden, that of author Eudora Welty in Jackson, Mississippi. However there is a significant difference: Haltom had the advantage of knowing her subject's creator over the last few years of her life, learning that

Welty did not want the garden to be "pretentious, inappropriate, or filled with plants chosen for showiness."

The resulting book, "One Writer's Garden," co-written with Jane Roy Brown, is primarily an engaging biography of this 20th-century master of novels and short stories set in the American south. Many of Welty's stories have garden or gardening themes, likely inspired by the family garden. The final chapter recaps the restoration process, while throughout the book there are many insights into the gardening practices and customs of the garden's heyday in the 1920s through 1940s.



former President was enthralled with all matters of gardening—especially of food crops—throughout his life, despite his many public duties. He was also deeply involved with the fabric of his local community and region, and seemed to value friendships that did not overlap with his professional career.

Not surprisingly, I found the chapter on gardening books in the presidential library especially interesting. I think all gardeners will find something of value in the discussions on Jefferson's approaches to garden layout, planting methods, soil amending, staking, seed saving, and dealing with pests and weeds—you'll easily forget that your mentor lived roughly 200 years ago.

The second half of the book is subtitled "A Catalog of Selected Monticello Vegetables." Similar to many how-to books on vegetable gardening, this is an evaluation of the many favorite crops grown on the estate, broadly divided by the edible portion of each, including fruits, roots and leaves. Most of the selections are familiar, but some were used in different ways than we do now, and some the modern reader may find a bit odd.

For example, nasturtiums were grown primarily for their seeds, while the flowers were only a garnish. Jefferson had a passion for sesame (*Sesamum indicum*) and experimented unsuccessfully with different pressing techniques to produce oil.

Finally, every gardener has his or her favorites, and "Jefferson fussed over his garden asparagus far more than any other vegetable." It was only grown "in carefully amended beds because this long-lived perennial...was a major investment." I think most gardeners can relate to this type of obsession. ~

BRIAN R. THOMPSON is the manager and curator of the Elisabeth C. Miller Library of the University of Washington Botanic Gardens. He is also a member of the "Bulletin" Editorial Board.

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